

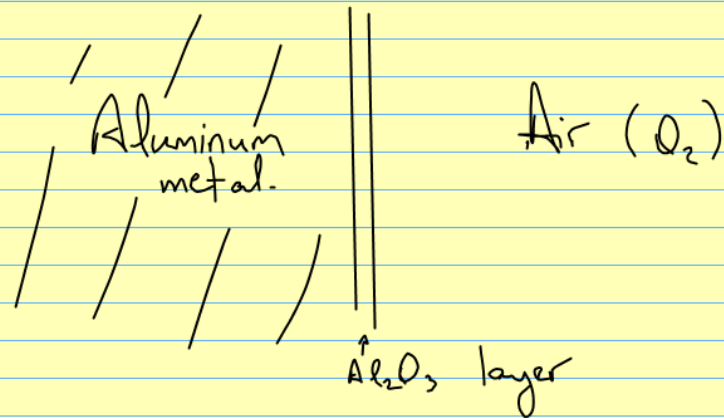
Corrosion

Jun 6, 2011

Corrosion is the deterioration of a metal caused by oxidation. Most metals undergo corrosion processes, with the exception of gold. Because of this almost all metals occur in nature in their oxidized state, with the exception of gold and rarely silver and copper.

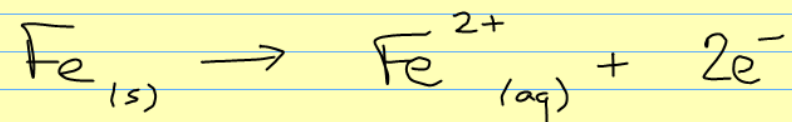
In typical metals the corrosion product, normally an oxide, does not adhere well to the original. In metals like zinc

And aluminum, the oxide layer adheres very tightly to the underlying metal preventing further corrosion.

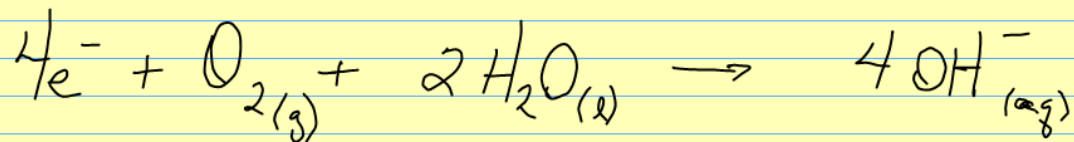


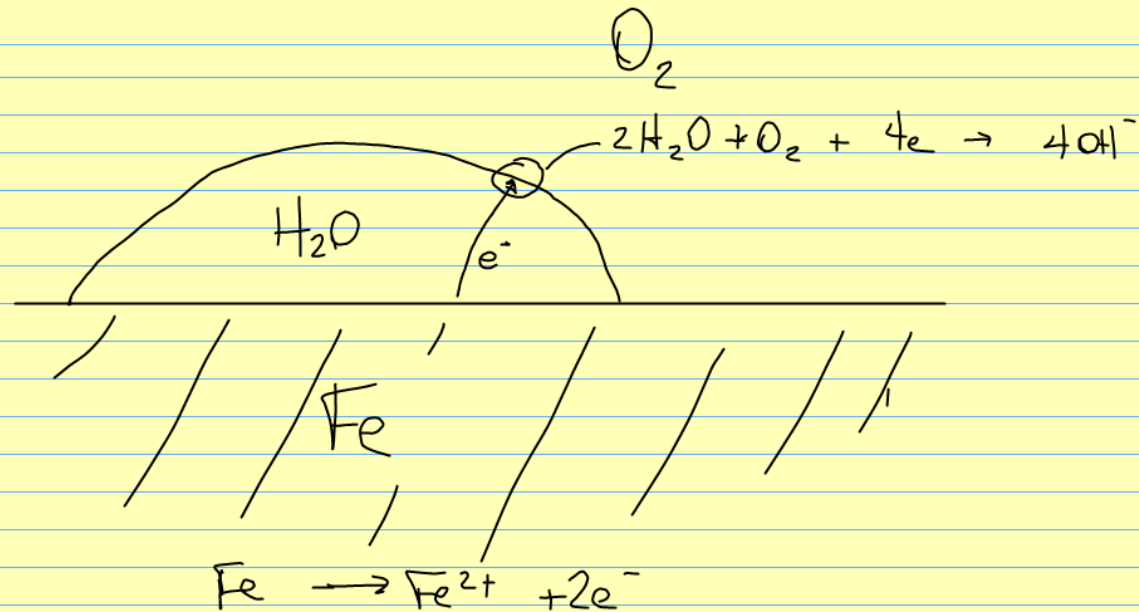
In iron metal the corrosion process is a significant concern. This is because iron is used extensively in manufacturing

as steel. Iron corrodes when it is exposed to air in the presence of water. When iron corrodes the iron metal is oxidized in the reaction:



The oxygen combines with water to be reduced:





For corrosion to occur the electrons must travel to the surface of the water droplet, where the oxygen contacts the water. If an ionic substance such as salt is dissolved in the water this becomes much easier.

Factors Affecting Corrosion

There four factors that influence the rate of corrosion:

- ① moisture - since water is a reactant it must be present
- ② electrolytes - ionic compounds dissolved in water create conductive solutions called electrolytes
 - electrolytes transport electrons more efficientlycorrosion occurs at a faster rate.

③ contact with a less reactive metal.

- contact between two different metals creates a galvanic cell in the presence of an electrolyte
- the more reactive metal will corrode more quickly under these conditions

④ mechanical stresses

- when a metal is dented or bent it creates defects in the structure of the metal, allowing it to corrode more quickly.

p416 Q2,3,6,7,8,9.